IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re United States Patent Application of:		**Docket No.:**	**026228-101.02-029**
Applicants:	**Geddes, et al.**	**Conf. No.:**	**6557**
Application No.:	**10/536,502**	**Art Unit:**	**2858**
Date Filed:	**12/14/2005**	**Examiner**	**Angela M Bertagna**
Title:	**HIGH SENSITIVITY ASSAYS FOR PATHOGEN DETECTION USING METAL-ENHANCED FLUORESCENCE**	**Customer No.:**	**24239**

RESPONSE TO MARCH 16, 2011 OFFICE ACTION IN U.S. PATENT APPLICATION NO. 10/536,502

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the March 16, 2011 Office Action issued for the above-identified application, applicants submit the following response:

In the Claims

1. (Currently amended) A method for detecting a [[*B.*] *Bacillus, anthracis* in a sample, the method comprising:

a) providing a system consisting of:

a layer of immobilized metal particles positioned on a surface substrate, wherein the immobilized metal particles have attached thereto a captured nucleotide sequence probe which is complementary to a known first nucleotide sequence section of a specific single nucleotide sequence of the *Bacillus anthracis,* wherein each ~~of the~~ capture nucleotide sequence probe is the same; and

a free nucleotide sequence probe, wherein each free nucleotide sequence probe is the same, wherein the free nucleotide sequence probe is complementary to a known second nucleotide sequence section of the specific single nucleotide sequence of *B. anthracis* and has attached thereto a fluorophore, wherein the fluorophore is incorporated at a specific location on the free nucleotide sequence probe so that binding of the free nucleotide sequence probe to the known second nucleotide sequence section of the *B. anthracis* causes the fluorophore to be positioned from about 50 to about 500Å from the surface of the immobilized metal particles;

b) contacting the sample with the captured nucleotide sequence probe, wherein any *B. anthracis* in the sample having a nucleotide sequence complementary to the captured nucleotide sequence probe binds to the captured nucleotide sequence probe; and

c) contacting any bound *B. anthracis* sequence with the [[a]] free nucleotide sequence probe, ~~wherein each of the free nucleotide sequence probe is the same, wherein the free nucleotide sequence probe is complementary to a known second nucleotide sequence section of the specific single nucleotide sequence of *B. anthracis* and has attached thereto a fluorophore, wherein the fluorophore is incorporated at a specific location on the free nucleotide sequence probe so that binding of the free nucleotide sequence probe to the known second nucleotide sequence section of the *B. anthracis* causes the fluorophore to be positioned from about 50 to about 500Å from the surface of the immobilized metal particles~~ thereby positioning the fluorophore for enhancing fluorescence emission when

excited by an irradiating source and using such emissions to detect the presence of *B. anthracis*.

2. -4. (Cancelled)

5. (Previously presented) The method according to claim 1, wherein the metal particles are silver or gold.

6. (Previously presented) The method according to claim 1, further comprising detecting fluorescence emissions with a detection device.

7. (Previously presented) The method according to claim 6, wherein the detection device comprises a spectrometer, luminometer, plate reader, fluorescent scanner, or flow cytometer.

8. (Previously presented) The method according to claim 1, wherein the captured nucleotide sequence probe is covalently linked to the immobilized metal particles.

9. (Previously presented) The method according to claim 1, wherein binding of the captured and free nucleotide sequence probes to the first and second known nucleotide sequences of *B. anthracis* is conducted under highly stringent hybridization conditions.

10. (Original) The method according to claim 1, wherein the irradiating source uses a 1-photon or 2-photon excitation means.

11. (Cancelled)

12. (Original) The method according to claim 1, wherein the fluorophore comprises a low quantum yield species.

13. (Original) The method according to claim 1, wherein the fluorophore can undergo two-photon excitation.

14. (Currently amended) The method according to claim 1, wherein the fluorophore is ~~comprises~~ Rhodamine B, rose bengal or fluorescein isothiocyanate.

15. (Previously presented) The method according to claim 1, wherein the free nucleotide sequence probe further comprises a metal colloid attached thereto and positioned for sandwiching the fluorophore between the metal colloid and the immobilized metal particles on the substrate when the known second nucleotide sequence of *B. anthracis* is bound.

16. (Currently amended) An assay method for detecting a target pathogen in a sample, the method comprising:

a) providing a system consisting of:

an immobilized metallized layer positioned on a surface substrate, wherein the immobilized metallized layer has attached thereto an immobilized capture nucleotide sequence probe complementary to a first known nucleotide sequence of a specific single nucleotide sequence of the target pathogen, wherein each ~~of the~~ immobilized capture nucleotide sequence probe is the same having a specific length and sequence of nucleotides;

a free nucleotide sequence probe, wherein each free nucleotide sequence probe is the same having a specific length and sequence of nucleotides, wherein the free nucleotide sequence probe is complementary to a second known nucleotide sequence of the specific single nucleotide sequence of the target pathogen, wherein the free nucleotide sequence probe has attached thereto a fluorophore, wherein the fluorophore is incorporated at a specific location on the free nucleotide sequence probe so that binding of the free nucleotide sequence probe to the nucleotide sequence of the target pathogen causes the fluorophore to be positioned from about 50 to about 500 Å from the immobilized metallized surface;

b) contacting the sample with the immobilized capture nucleotide sequence probe, wherein the nucleotide sequence of the target pathogen binds to the immobilized capture nucleotide sequence probe; and

c) contacting the bound nucleotide sequence of the target pathogen with [[a]] the free nucleotide sequence probe~~, wherein each of the free nucleotide sequence probe is the same having a specific length and sequence of nucleotides, wherein the free nucleotide sequence~~

~~probe is complementary to a second known nucleotide sequence of the specific single nucleotide sequence of the target pathogen, wherein the free nucleotide sequence probe has attached thereto a fluorophore, wherein the fluorophore is incorporated at a specific location on the free nucleotide sequence probe so that binding of the free nucleotide sequence probe to the nucleotide sequence of the target pathogen causes the fluorophore to be positioned from about 50 to about 500 Å from the immobilized metallized surface and metal colloid to enhance fluorescence emission when excited by an irradiating source, wherein the free nucleotide sequence probe further comprises a metal colloid attached thereto and positioned for sandwiching the fluorophore between the metal colloid and immobilized metal particles on the surface substrate when the nucleotide sequence of the target pathogen is bound to the immobilized metal particles~~; and

d) identifying the target pathogen by fluorescence emission by irradiating the system with an irradiating source to excite the fluorophore.

17. (Cancelled)

18. (Previously presented) The method according to claim 16, wherein the target pathogen is *B. anthracis*.

19. (Cancelled)

20. (Original) The method according to claim 16, wherein the metallized surface comprises metal particles comprising silver or gold.

21. (Original) The method according to claim 16, further comprising detecting fluorescence emission with a detection device.

22. (Currently amended) The method according to claim 21, wherein the detection device comprises a spectrometer, luminometer, plate reader, fluorescent scanner, or flow cytometer.

23. (Cancelled)

24. (Original) The method according to claim 16, wherein the irradiating source uses a 1-photon or 2-photon excitation means.

25. (Original) The method according to claim 16, wherein the fluorophore comprises a low quantum yield species.

26. (Original) The method according to claim 16, wherein the fluorophore can undergo two-photon excitation.

27. (Currently amended) The method according to claim 16, wherein the fluorophore is ~~comprises~~ Rhodamine B, rose bengal or fluorescein isothiocyanate.

28. – 56. (Cancelled)

57. (New) The method according to claim 16, wherein the free nucleotide sequence probe further comprises a metal colloid attached thereto and positioned for sandwiching the fluorophore between the metal colloid and immobilized metal particles on the surface substrate when the nucleotide sequence of the target pathogen is bound to the immobilized metal particles.

REMARKS

Rejection of Claims and Traversal Thereof

In the March 16, 2011 Office Action:

claims 1, 5-10, 12-16, 18, 20-22 and 24-27 were rejected under 35 U.S.C. §112, first paragraph; and

claims 16, 18, 20-22 and 24-27 were rejected under 35 U.S.C. §112, second paragraph.

These rejections are hereby traversed and reconsideration of patentability of the pending claims is therefore requested in light of the following remarks.

Rejections under 35 U.S.C. 112, first and second paragraphs

Applicants have amended the claims according to the suggestions of the Office thereby obviating these rejections. Applicants request a withdrawal of same.

Fees Payable

No fee is due for entry of this response, however, if any additional fee is found due for entry of this amendment, the Commissioner is authorized to charge such fee to Deposit Account No. 13-4365 of Moore & Van Allen.

Conclusion

Applicants have satisfied the requirements for patentability. All pending claims are free of the art and fully comply with the requirements of 35 U.S.C. §112. It therefore is requested that Examiner Bertagna reconsider the patentability of the pending claims in light of the distinguishing remarks herein, and withdraw all rejections, thereby placing the application in condition for allowance. If any issues remain outstanding incident to the allowance of the application, Examiner Bertagna is requested to contact the undersigned attorney at (919) 286-8089.

Respectfully submitted,

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